

What is claimed is:

1. An composition comprising:

- 5 (i) a modified lecithin having the formula $C_8H_{17}O_5NRR'$,
wherein R and R' are fatty acids having the formula $CH_3(CH_2)_nCOO$,
wherein n is between 4 and 22; and
(ii) a active agent wherein said lecithin is present in an amount effective to
protect said active agent from environmental oxidation.

- 10 2. The composition according to claim 1, wherein said active agent is intended for
consumption by an animal that subjects said agent to ruminal fermentation degradation
and said lecithin is present in an amount effective to protect said active agent from
ruminal fermentation degradation while allowing for intestinal digestion and absorption
of said active agent.
- 5 3. The composition of claim 1 wherein said lecithin phospholipid is non-hydratable
whereby said lecithin phospholipids pass more or less intact through the rumen into the
intestine.
- 10 4. The composition of claim 1, further comprising phosphatidylcholine in said lecithin
composition in an amount effective to disintegrate said composition in the post-ruminal
digestive tract.
- 15 5. The composition according to claim 1 wherein the amount of modified lecithin is
between about 30% and 95% by weight of the total composition.
- 20 6. The composition according to claim 1 wherein the amount of active agents is between
about 5% and 70% by weight of the total composition.
- 25 7. A method a providing an active agent to a ruminant comprising administering to said
ruminant the composition of claim 1.
8. The composition of claim 1 wherein the lecithin is selected from the group consisting of
bleached, unbleached, powdered, granular, liquid, coated, uncoated, and enriched.
- 30 9. The composition of claim 1 wherein the active agent is selected from the group consisting
of: essential amino acids, vitamins, minerals, antibiotics, amino alcohols, polyols,
peptides, phytochemicals, fats, rumen inert fats, fatty acid soaps, fatty acid salts,

enzymes, emulsifiers, hormones, pharmaceuticals, disintegrants and other animal medicaments.

10. The composition of claim 9 wherein the essential amino acid is selected from lysine, methionine, histidine or combinations thereof.

5 11. The composition of claim 9 wherein the vitamins are selected from the group consisting of B-complexes, A, D, E, K, C, and combinations thereof.

12. The composition of claim 9 wherein the minerals are selected from the group consisting of cobalt, copper, iodine, iron, manganese, selenium, zinc or combinations thereof.

10 13. The composition of claim 9 wherein the antibiotics are selected from the group consisting of teramycin, tetracycline, bacitracin or combinations thereof.

14. The composition of claim 9 wherein the amino alcohols are selected from the group consisting of choline, ethanolamine, serine, or combinations thereof.

15. The composition of claim 9 wherein the polyols are selected from the group consisting of sorbitol, mannitol, maltitol or combinations thereof.

15 16. The composition of claim 9 wherein the emulsifiers are selected from the group consisting of monoglycerides, lactylates, diacetyltartaric acid esters, sugars, salts or combinations thereof.

17. The composition of claim 9 wherein the phytochemicals are selected from the group consisting of sterols, stanols, carotenoids, flavonoids or combinations thereof.

20 18. The composition of claim 9 wherein the fatty acid soaps are selected from the group consisting of calcium, magnesium, iron, zinc, chromium, manganese, copper fatty acid soaps or combinations thereof.

19. The composition of claim 9 wherein the rumen inert fats are selected from a group consisting of calcium salts of long chain fatty acids.

25 20. The composition of claim 19 wherein the rumen inert fat is further selected from the group consisting of Megalac, Super-Lac, Advance EB 100, EnerGII, Lipicafat, or combinations thereof.

21. A composition of claim 1 wherein the lecithin phospholipid carrier is complexed with a multivalent metal salt in a ratio of between 100:1 and 400:1.

30 22. The composition of claim 8 wherein the lecithin phospholipid carrier is complexed with a multivalent metal salt in a ratio of between 100:1 and 400:1.

23. The composition of claim 9 wherein the the lecithin phospholipid carrier is complexed with a multivalent metal salt in a ratio of between 100:1 and 400:1.
24. A method for making a composition which is rumen stable for providing active agents to ruminants, comprising: (i) selecting an amount of lecithin phospholipids or lecithin phospholipids complexed with a multivalent metal salt in a ratio of between 100:1 and 400:1, wherein said complexed amount is equal to between about 30% and about 95% by weight of the total composition, and (ii) selecting an amount of active agents in an amount equal to between about 5% and about 70% by weight of the total composition, and, (iii) mixing the said selected amounts of lecithin or complexed lecithin phospholipids and active agents in a mixing device, and (iv) placing an amount of the mixed lecithin phospholipids and active agents in a means for compressing said mixture, and (v) compressing and/or extruding said mixture in said compression means for at least 5 seconds at a pressure of at least 100 psig, whereby said compression means forms a matrix having a density range of between about 0.95 and 1.2.
25. The method of claim 24 wherein the lecithin phospholipid that is complexed with a multivalent metal salt is selected from unbleached, synthetic or coated lecithin.
26. The method of claim 24 wherein the lecithin phospholipid that is complexed with a multivalent metal salt is enriched phosphatidylcholine in excess of 23%, or phosphatidylethanolamine in excess of 21%, or phosphatidylinositol in excess of 19%.
27. The method of claim 24 wherein the active agents are selected from the group consisting of essential amino acids, vitamins, minerals, antibiotics, amino alcohols, polyols, peptides, phytochemicals, fats, rumen inert fats, fatty acid soaps, fatty acid salts, enzymes, emulsifiers, hormones, pharmaceuticals, disintegrants and other animal medicaments.
28. The method of claim 24 wherein an additives may be added to the complexed lecithin phospholipid and active agents, in the compression means to alter the bioavailability of the active agents.
29. The method of claim 24 wherein the additives are selected from the group consisting of disintegrants, calcium stearoyl-2-lactylate, sodium stearoyl lactylate, ethoxylated monoglyceride, polysorbates, dry monoglycerides, starches and sugars.
30. The method of claim 28 wherein the additive is modified lecithin phospholipids.

31. The method of claim 30 wherein the modified lecithin phospholipids are further selected from the group consisting of hydroxylated lecithin, and enzyme modified lecithin.
32. The method of claim 24 further comprising the forming of the rumen stable composition into a size and shape suitable for ingestion by ruminant animals.